

REMARKS

Claims 55-89 were pending in the present application. Claims 70-77 stand rejected and claims 55-69 and 78-89 have been withdrawn from consideration by the Office Action. In light of the arguments below reconsideration and allowance of all previously pending claims 55-89 are respectively requested.

I. Election/Restriction

Applicant hereby affirms that election is made to those claims directed generally to the structure of Figs. 9A-9D. Applicant's disagree, however, with the Examiner's conclusion that claims 55-69 and 78-89 are not also directed to the structure of Figs. 9A-9D. In particular, the Examiner stated: "Claims **55-69 & 78-89** have [sic] withdrawn from further consideration by the examiner because these claims does not meet the Fig. 9 which does not have a single crystal silicon structure formed in said first wafer layer." (Emphasis in original). Applicants submit that Figs. 9A-9D do include a single crystal silicon structure formed in the first wafer layer. As described in the present application at least on page 20, lines 14-25, and with reference to Fig. 9A, a suspended structure 218 is formed in single crystal silicon layer 200. Therefore, claims 55-69 and 78-89 are directed to the structures of Figs. 9A-9D, and Applicant's respectively request withdrawal of the restriction requirement and examination of these claims.

II. Specification

The specification stands objected to as failing to provide proper antecedent basis for the claims subject matter; specifically, the Examiner states the "specification does not provide the beam having an aspect ratio of height to width of at least 5:1 or 10:1."

Applicants respectively traverse and submit the specification provides proper antecedent basis for the claimed subject matter. As described on page 18, lines 11-13, "beam structures with aspect ratios (height/width) of up to 20:1 have been fabricated using the DRIE processes described below." Although, this portion of the application is referring to Figure 8G, similar process steps described with reference to Figures 8A-8G are also used during the fabrication of Figs. 9A-9D as stated on page 19, lines 18-22 of the present application. Therefore, the present application provides antecedent basis for a beam having an aspect ratio of height to width of at least 5:1 and 10:1 as claimed.

III. Claim Rejections

Claims 70-77 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,198,390 to MacDonald et al. hereinafter ("MacDonald"). The Examiner states, in part:

MacDonald et al. do not expressly teach the securing (fusion bonding) the first wafer layer to the carrier. However, it is how to fabricate the semiconductor micromechanical device rather than structure of device. This is a product-by-process limitation. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself..."

Applicants respectively traverse and submit that MacDonald does not teach or suggest a semiconductor micromechanical device produced by securing a first single crystal silicon wafer layer including a recessed region facing a carrier, where the structure includes both a first single crystal silicon wafer layer and a carrier. MacDonald neither discloses nor suggests a structure including a first single crystal silicon wafer and a carrier; rather, MacDonald discloses a structure formed in a single substrate layer 12. (see Figs. 1A-1F). Therefore, although determination of the patentability of a product-by-process claim depends in part on the product itself, the device of

MacDonald fails to disclose or suggest both a first single crystal silicon wafer and a carrier in the disclosed product (or process for that matter).

In addition to a different product, the process recited in claim 70 including securing two layers, i.e., silicon wafer and carrier, is not disclosed or suggested by MacDonald, and the process recited by claim 70 produces a structure that eliminates certain features resulting from the fabrication of suspended structures from a single silicon layer. In particular, MacDonald discloses a single layer process and structure having an island 22 suspended over cavities 50, 52. The island 22 and cavities 50, 52 are formed from the single substrate 12, in part, by an etch which laterally undercuts and releases island 22. (col. 5, lines 9-27). The lateral processes for forming island 22 results in ridge 54 on island 22 and ridge 56 on the cavity floor below. (see Fig. 1F). The process of claim 70 obviates the need for a lateral etch to release structure(s) and eliminates the presence of the ridges formed as a byproduct in the final product of MacDonald. Thus, the process and product of claim 70 is more versatile than the process and product disclosed by MacDonald including ridges 54 and 56 formed on the underside of structures and opposing surfaces. For example, the underside of beam as recited by claim 70 may include various planar and nonplanar features unachievable by the process of MacDonald. (see, e.g., the present application on page 15, lines 9-12).

Accordingly, because MacDonald fails to disclose or suggest a first wafer layer and a carrier layer as recited by claim 70, the rejection should be withdrawn and claim 70 allowed. Further, claims 71 to 77 depend from claim 70 and should be allowable for at least similar reasons as claim 70.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant(s) petition(s) for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 356952000304.

Dated: October 10, 2003

Respectfully submitted,

By 

Christopher B. Eide

Registration No.: 48,375

MORRISON & FOERSTER LLP

755 Page Mill Road

Palo Alto, California 94304-1018

(650) 813-5720

Attorneys for Applicant